Clinical Trial Protocol
Iranian Registry of Clinical Trials

16 Sep 2026

Survey effect of manual percussion and mechanical vibration on respiratory indexes in mechanically ventilated patients

Protocol summary

Study aim

The effect of manual precision and mechanical vibration on pulmonary parameters of patients undergoing mechanical ventilation in intensive care units

Design

A randomized crossover clinical trial

Settings and conduct

For each patient, there are 90 minutes intervals between manual precussion and mechanical vibration which is done by researcher. To perform a manual precision, the wrist strikes the right wrist, which is cup-shaped and equal in strength from the height of ten centimeters to the back and front of the patient's chest. The chest is divided into four segments, percussion done for each with a thirty-second . These beats are performed at speeds of 4 times per second for 4 minutes at the time of Inhale and exhale To vibrate , a constant frequency of 2 Hz is used, and is performed by the researcher for 1 to one and a half minutes during the patient's breathing during exhalation. The shaking is done by placing the vibrating device on the back and front of the chest. In this intervention, the chest is divided into four upper and lower right and left sections, each of which is vibrated by five vibrations during exhalation.

Participants/Inclusion and exclusion criteria

Age over 18 years Being connected to a mechanical ventilator Complete cardiopulmonary monitoring Hemodynamic stability in the last 6 hours according to anesthesiologist Absence of spinal cord injuries No lung disease and no pneumothorax, hemothorax and rib fracture Recurrent volume of gastric discharge less than 100 ml before intervention

Intervention groups

Group A is the group which first receive manual percussion and after the wash out period mechanical vibration is performed on them Group B is the group that is first mechanical vibration performed after the washout period recieve manual percussion.

Main outcome variables

Pulmonary compliance Airway Resistance Arterial blood oxygen saturation

General information

Reason for update

Acronym

IRCT registration information

IRCT registration number: **IRCT20100921004787N6**
Registration date: **2020-02-19, 1398/11/30**
Registration timing: **prospective**

Last update: **2020-02-19, 1398/11/30**
Update count: **0**

Registration date

2020-02-19, 1398/11/30

Registrant information

Name

Tahereh Khaleghdoost Mohammadi

Name of organization / entity

Guilan University of Medical Sciences

Country

Iran (Islamic Republic of)

Phone

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Recruitment status

Recruitment complete

Funding source

Expected recruitment start date

2020-03-29, 1399/01/10

Expected recruitment end date

2020-05-30, 1399/03/10

Actual recruitment start date

empty

Actual recruitment end date

empty

Trial completion date

empty

Scientific title

Survey effect of manual percussion and mechanical vibration on respiratory indexes in mechanically ventilated patients

Public title

Survey effect of manual percussion and mechanical vibration on respiratory indexes in mechanically ventilated patients in Rasht Poursina hospital critical care units 2019- 2020

Purpose

Prevention

Inclusion/Exclusion criteria

Inclusion criteria:

Age over 18 years Connected to mechanical ventilation Complete cardiopulmonary monitoring Hemodynamic stability in the last 6 hours according to anesthesiologist Absence of spinal cord injuries No pulmonary disease and no pneumothorax, hemothorax and rib fracture Recurrent volume of gastric lavage less than 100 ml before intervention

Exclusion criteria:

Hemodynamic parameters instability Increased intracranial pressure The need for emergency suctioning during the intervention Changes in ventilator device settings and modes during the study Patient leaving the ward to perform paraclinical procedures and withdraw from monitoring

Age

From **18 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Participant

Sample size

Target sample size: **62**

Randomization (investigator's opinion)

Randomized

Randomization description

Specimens are assigned randomly to quadruple blocks in order to select the sequence of intervention in groups A and B, which will be sequenced using" Random block " software. The proprietary Randomized Allocation is kept in a sealed package with the ward supervisor. And before starting the intervention will open. Based on the daily and inpatient referrals in the section according to the sequence of samples will be divided into groups A and B. Group A is the group which first receive manual percussion and after the wash out period mechanical vibration is performed on them and Group B is the group that is first mechanical vibration performed after the washout period recieve manual percussion.

Blinding (investigator's opinion)

Single blinded

Blinding description

participant. They do not know the order of the interventions

Placebo

Not used

Assignment

Crossover

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Ethics committee of Guilan University of Medical Sciences

Street address

Student of Nursing and Midwifery Faculty, Shahid Beheshti Highway, Rasht

City

Rasht

Province

Guilan

Postal code

4146939841

Approval date

2020-01-18, 1398/10/28

Ethics committee reference number

IR.GUMS.REC.1398.468

Health conditions studied

1

Description of health condition studied

Chest physiotherapy

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Pulmonary compliance

Timepoint

Before intervention and 1, 5, 15, 30 minutes after intervention in each group

Method of measurement

View on ventilator screen

2

Description

Airway resistance

Timepoint

Before intervention and 1, 5, 15, 30 minutes after intervention in each group

Method of measurement
View on ventilator screen

3

Description
Percentage of arterial blood oxygen saturation
Timepoint
Before intervention and 1, 5, 15, 30 minutes after intervention in each group
Method of measurement
From the monitoring screen connected to the patient

Secondary outcomes

empty

Intervention groups

1

Description
First Intervention group: or group A: the group that first received manual percussion and after wash out period mechnical vibration perform on them .one hour after suction and before the intervention started ,the indices like pulmonary compliance and airway resistance seen on the ventilator screen is recorded as well as the percentage of arterial oxygen saturation from the monitor next to the patient's bed. Indicators are recorded immediately after each intervention, and at 1, 5, 15 and 30 minutes after each intervention.
Category
Prevention

2

Description
Intervention group: the group that first received mechanical vibration and after wash out period manual percussion perform on them .one hour after suction and before intervention started ,the indices like pulmonary compliance and airway resistance seen on the ventilator screen is recorded as well as the percentage of arterial oxygen saturation from the monitor next to the patient's bed. Indicators are recorded immediately after each intervention, and at 1, 5, 15 and 30 minutes after each intervention.
Category
Prevention

Recruitment centers

1

Recruitment center
Name of recruitment center
Poursina Medical and Educational Hospital
Full name of responsible person
Nasim Rasoulnia
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Fax
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Web page address

Sponsors / Funding sources

1

Sponsor
Name of organization / entity
Rasht University of Medical Sciences
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Mohamad reza Naghipoor
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Email
naghi@gums.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
No
Title of funding source
Guilan university of medical science
Proportion provided by this source
1
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Rasht University of Medical Sciences
Full name of responsible person
Nasim Rasoulnis
Position

Student of Master science of medical surgical nursing
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Sharing plan

Deidentified Individual Participant Data Set (IPD)
Undecided - It is not yet known if there will be a plan to make this available
Study Protocol
Yes - There is a plan to make this available
Statistical Analysis Plan
Undecided - It is not yet known if there will be a plan to make this available
Informed Consent Form
Yes - There is a plan to make this available
Clinical Study Report
Undecided - It is not yet known if there will be a plan to make this available
Analytic Code
No - There is not a plan to make this available
Data Dictionary
Undecided - It is not yet known if there will be a plan to make this available
Title and more details about the data/document
Once the data collection is complete, the decision will be made
When the data will become available and for how long
Starting access after printing the article
To whom data/document is available
Everyone who reads the article
Under which criteria data/document could be used
Everyone wants to refer to the article
From where data/document is obtainable
Article Printers Magazine Website
What processes are involved for a request to access data/document
Additional information can be requested by email
Comments